COMPANY
Box 516, Saint Louis, Missouri 63166

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23 August 1983
E002-JFY-431

Mr. James M. Beggs
Administrator
NASA
4th and Maryland Avenues, S.W.
Washington, D.C. 20546

Dear Jim:

After participating in the recent White House meeting on commercial space activity, I thought it appropriate to review the McDonnell Douglas Electrophoresis Operations in Space (EOS) Program relative to the potential development of a man-habited space station by NASA.

As you know, McDonnell Douglas and Johnson & Johnson are actively pursuing the development of an electrophoresis process that will use the gravity-free environment of space to produce pharmaceutical products that cannot be economically produced on Earth. We are now developing our first protein product, a natural hormone currently unavailable. Since 1976, we have spent many millions of dollars on this effort. We have been successful in proving the validity of our concept in our first three Shuttle flights with our continuous flow electrophoresis research equipment. We are now designing a production version of our system which will fly in the payload bay of the Shuttle in 1985 and 1986 and therefore, our expenditure rate has greatly accelerated.

We believe that the potential for manufacturing new and improved pharmaceuticals in space is real and attainable. While shuttle-based research has been successful, this method is slow and laborious. With the opportunity for research and development of new products that a space station would provide, we could during the 1990s bring five times the number of new breakthrough pharmaceuticals to market. Also, the costs of development and production of these new products can be greatly reduced.

Our recent work with live cell material such as the islets (beta cells) being studied in cooperation with Washington University School of Medicine as a potential cure for diabetes, leads us to believe that it will be impossible to automate a facility that could successfully separate live cells by electrophoresis. Unlike protein materials, the sensitivity of

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living organisms, i.e., beta cells, to operating conditions within the system dictates a man interface during processing to ensure their survival. If the current treatment under investigation proves successful, it follows that without a space station the probability of achieving a population-wide cure for diabetes is low.

As you know, we are striving to begin commercial production of our first protein product in early 1987 or before. Because a space station would not be available until the early 1990s, we are planning to use dedicated unmanned free flying spacecraft for increased production. Serious negotiations are presently under way with three companies willing to invest private funds to build this spacecraft. We look at this initial commercial step as being only interim.

We have been encouraged by the progress NASA has been making in defining such a space station program. Consider this a formal request for the McDonnell Douglas EOS Program to be included as the first commercial user of a NASA space station.

Assuming our continued success in this activity, you may consider this a formal commitment to use the space station as the major base of operations for carrying out and expanding this new industry.

Sincerely yours,

MCDONNELL DOUGLAS CORPORATION

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